SK-V53 Flash Series
产品规格书

4/8 接口单信道语音芯片

V53F040/V53F080/V53F170/V53F340/V53F680

产品概观

V53 闪存系列为全新世代高性价比的语音芯片，具有 9bits 高性能 PWM/DAC 语音引擎。并且具备有多样化的容量型号选择，并内置有高精准度起振器，毋需外部起振组件，外接组件少，让应用开发整体成本具有市场领先的优势。其中 V53000 可透过连接外部闪存来达成多样化容量需求。

功能概观

- 语音引擎：9bits PWM / 9bits DAO
- 可编辑阶数：3800 阶
- 可编辑群组数：63 组(最大)
- 开机执行群组：1 组
- 可放声音长度：
  40s(V53F040)/80s(V53F080)/170s(V53F170)/340s(V53F340)
  /680s(V53F680) 在 4bits 6K-Playrate 音质下
- V53000 最高可外接 128MBits SPI Flash
- 内置闪存加密引擎
- 八组可设定接口(依型号决定)
  - TG1 带序列模式一般输入接口。
  - TG2 可设定为低准位触发复位接口。
  - TG2 带序列模式一般输入接口。
  - TG3 一般接口，可程序化为音量调整接口。
  - TG4~8 一般接口。
- 可程序化接口触发型态
  - Re-triggered / Irre-triggered
  - Level / Edge
  - Hold / Un-hold
  - Voice Repeat / One-time voice.
  - On/Off function.
- 选表式声音压缩编码引擎 ：4bits / 5bits / 8bits / 9bits
- 内置单片机触发模式 SPI 接口
- 内置 RC 震荡起振回路，无须外部电路
- 宽工作电压：2.4~5.0V
- 独立外接闪存电源(V53000，≦VDD)
- 工作温度：-20℃ ~ 60℃ (不计工作频率飘移)

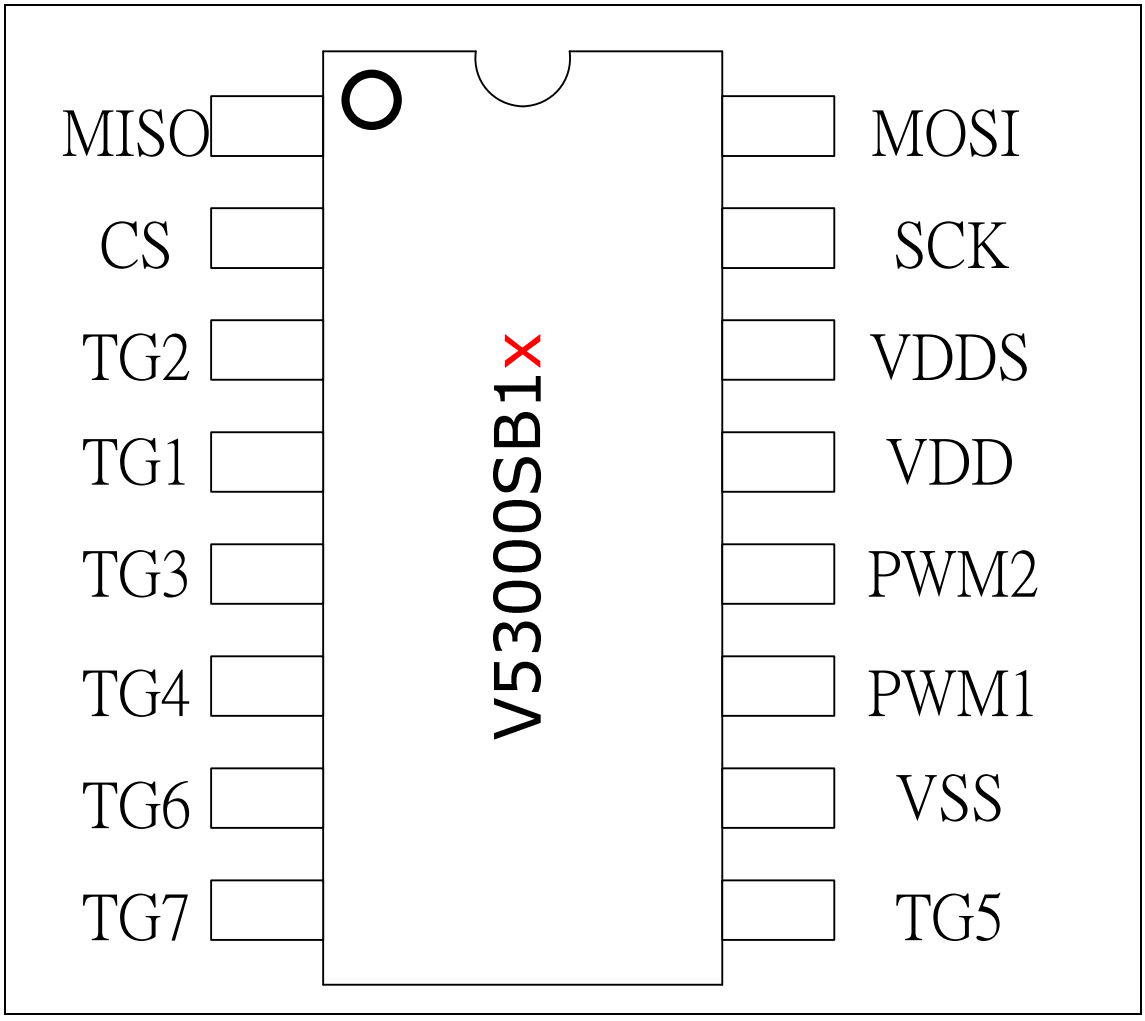
- 简易编程功能
  - 工作寄存器写入
  - 工作寄存器进位
  - 工作寄存器比较分支
- 可程序化输出状态
  - 待机准位
  - 工作高准位
  - 工作低准位
  - 输出频闪
- 多样化播放速率选择
  - 3.1K / 3.2K / 3.3K / 3.5K / 3.7K / 3.8K
  - 4.0K / 4.2K / 4.4K / 4.6K / 4.8K
  - 5.0K / 5.3K / 5.6K
  - 6.0K / 6.4K / 6.8K
  - 7.4K / 8.0K / 8.7K / 9.6K / 10.6K / 12.0K
  - 13.7K / 16.0K / 19.2K / 24.0K / 32.0K

Body overview 母体比较表

Body / 母体	Duration/预估秒数	IO counts / 接口数
V53F040	40” @6K/4bits	4/8
V53F080	80” @6K/4bits	4/8
V53F170	170” @6K/4bits	4/8
V53F340	340” @6K/4bits	4/8
V53F680	680” @6K/4bits	4/8

封装脚位图

V53000SB1 (SOP16)



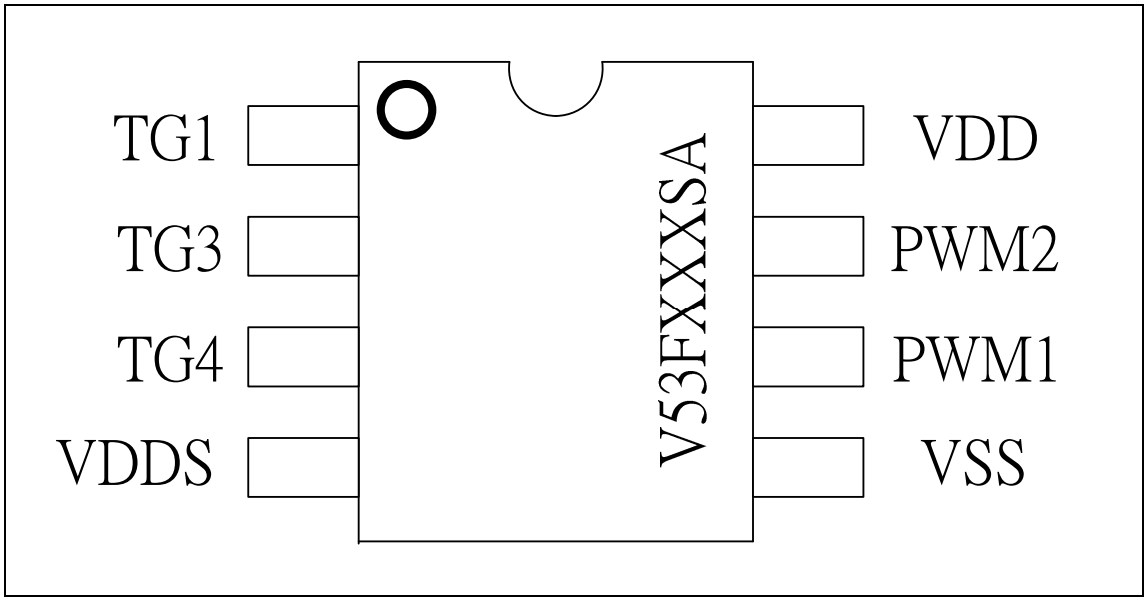
脚位说明

Pin Name	Write pin	MCU Mode	Description
VDD	VDD	VDD	电源供应脚
VDDL		VDDL	LDO 输出供应脚
VDDS		VDDS	外接闪存(SPI Flash)电源
VSS	VSS	VSS	接地脚
PWM1	SCK	PWM1	PWM 脚
PWM2	PWM2	PWM2	PWM 脚/DAO 输出脚
TG1	MOSI	DI	TG1 / SPI DI pin
TG2		SCK	TG2 / Low active RESET / SPI SCK pin
TG3	MISO	DO	TG3 / SPI DO pin

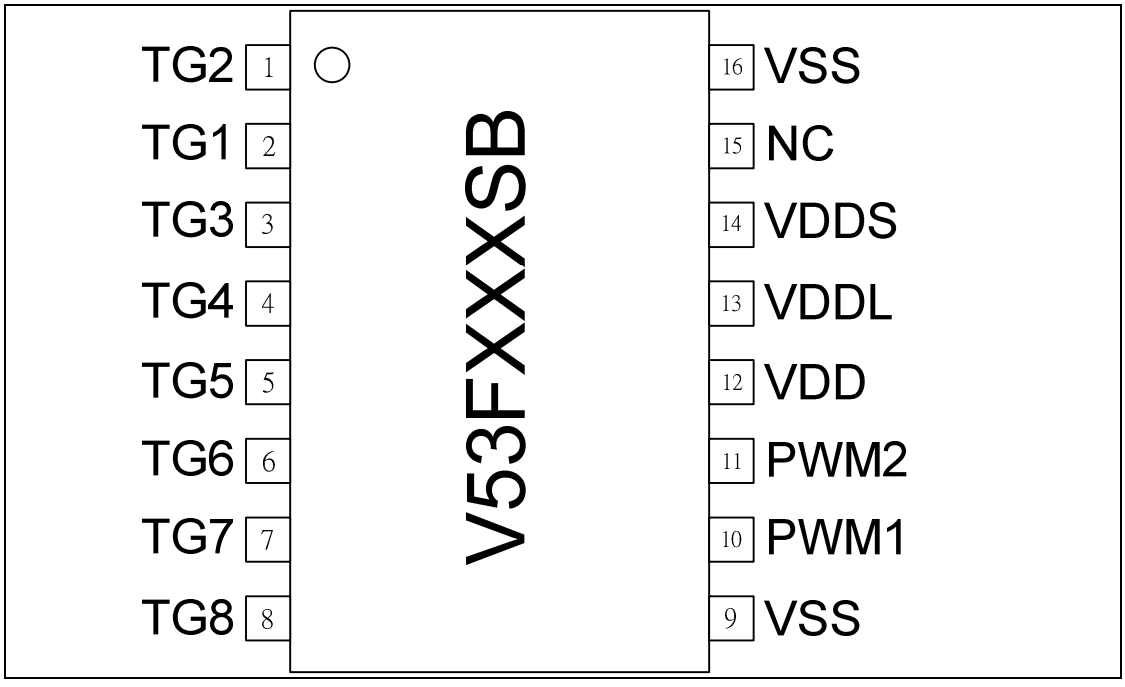
TG4	CSb	CSb	TG4 / CSb
TG5		-	TG5
TG6		-	TG6
TG7		-	TG7
TG8		-	TG8
MOSI		MOSI	External Flash SPI Interface – MOSI
MISO		MISO	External Flash SPI Interface – MISO
CS		CS	External Flash SPI Interface – CS
SCK		SCK	External Flash SPI Interface – SCK

封装脚位图

V53F040SA/080SA/170SA/340SA (SOP8)



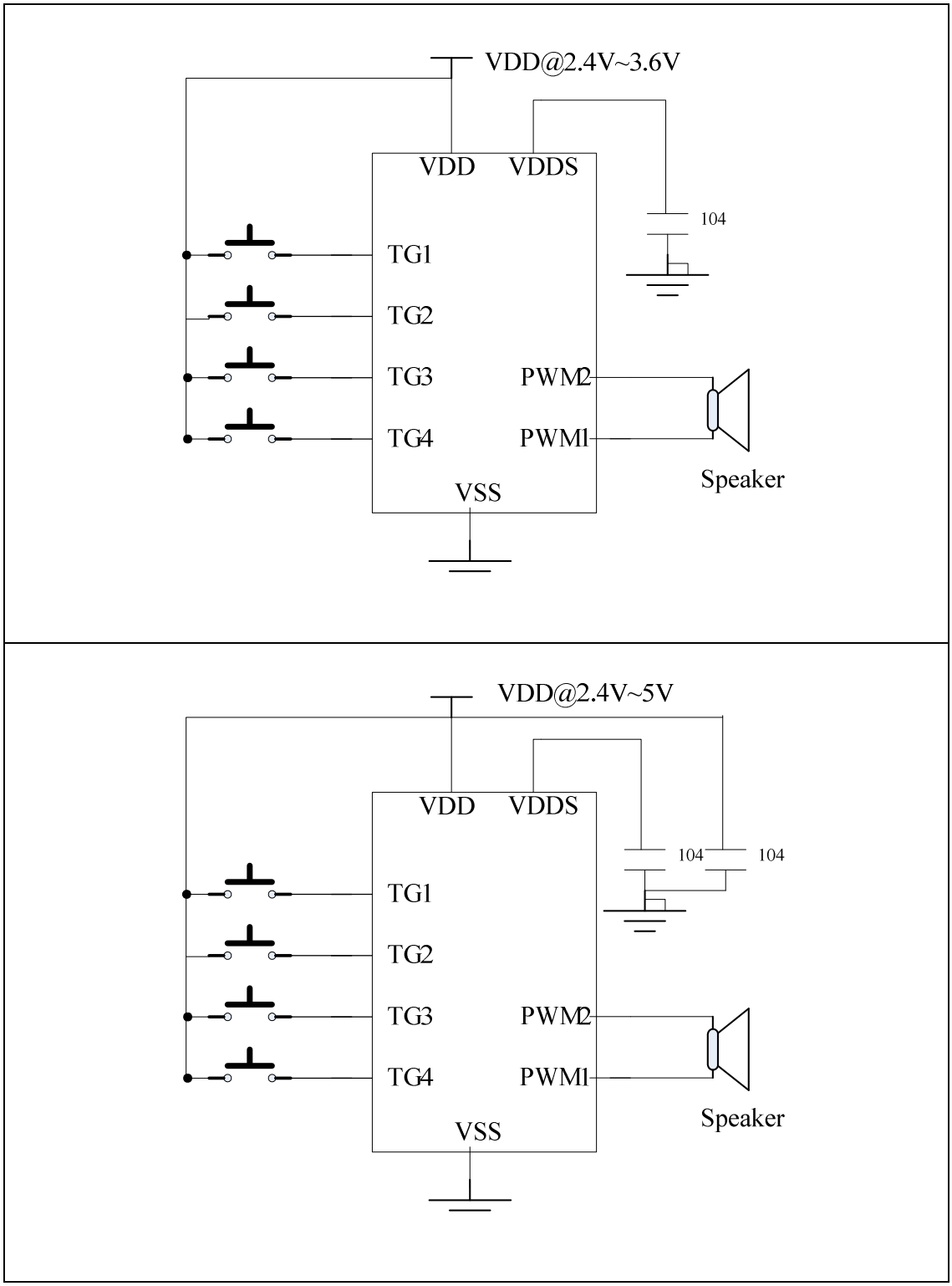
V53FXXXSB(SOP16)



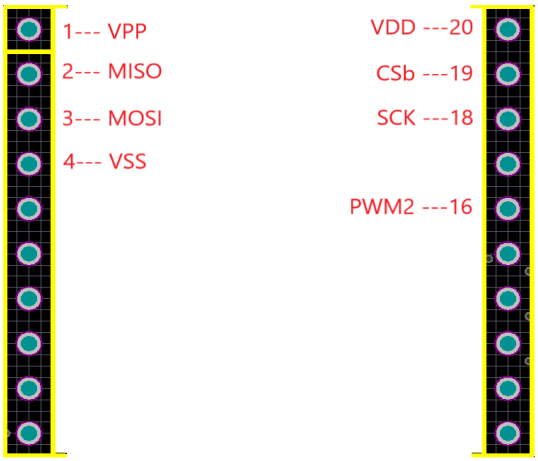
脚位说明

Pin Name	Write pin	MCU Mode	Description
VDD	VDD	VDD	电源供应脚
VDDL		VDDL	LDO 输出供应脚
VDDS		VDDS	外接闪存(SPI Flash)电源
VSS	VSS	VSS	接地脚
PWM1	SCK	PWM1	PWM 脚
PWM2	PWM2	PWM2	PWM 脚/DAO 输出脚
TG1	MOSI	DI	TG1 / SPI DI pin
TG2		SCK	TG2 / Low active RESET / SPI SCK pin
TG3	MISO	DO	TG3 / SPI DO pin
TG4	CSb	CSb	TG4 / CSb
TG5		-	TG5
TG6		-	TG6
TG7		-	TG7
TG8		-	TG8

应用线路图


VDD@2.4V~3.6V
VDD
VDDS
104
TG1
TG2
TG3
TG4
PWM2
PWM1
VSS
Speaker
VDD@2.4V~5V
VDD
VDDS
104
104
TG1
TG2
TG3
TG4
PWM2
PWM1
VSS
Speaker

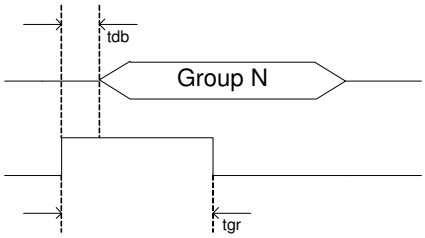
Writer board slot location



Trigger Timing

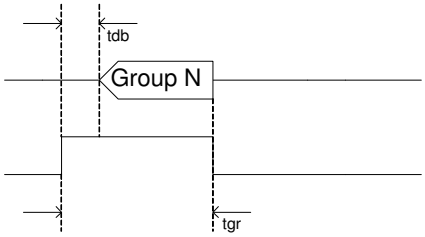
(a) Trigger Pulse Width < Group Length

Option Setting = Edge / Unhold



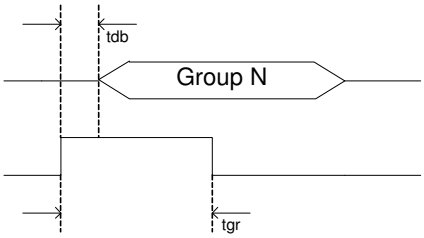
(b) Trigger Pulse Width < Group Length

Option Setting =Edge / Hold



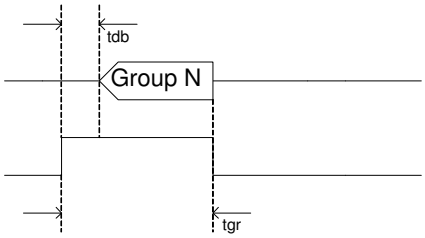
(c) Trigger Pulse Width < Group Length

Option Setting = Level / Unhold



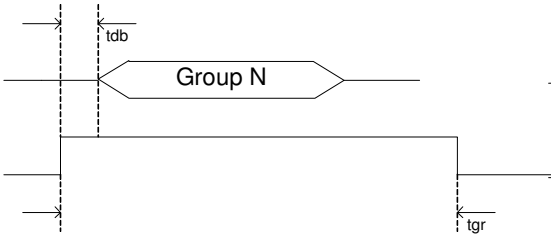
(d) Trigger Pulse Width < Group Length

Option Setting = Level / Hold



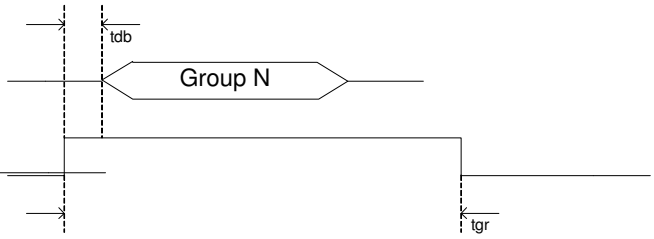
(e) Trigger Pulse Width > Group Length

Option Setting = Edge / Unhold



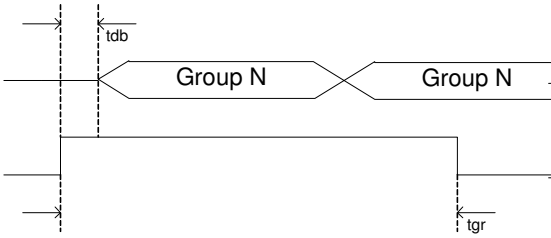
(f) Trigger Pulse Width >Group Length

Option Seeting = Edge / Hold



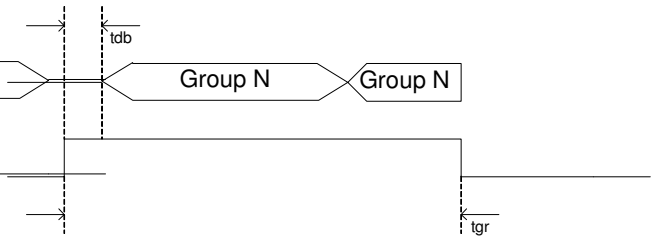
(g) Trigger Pulse Width > Group Length

Option Setting = Level / Unhold

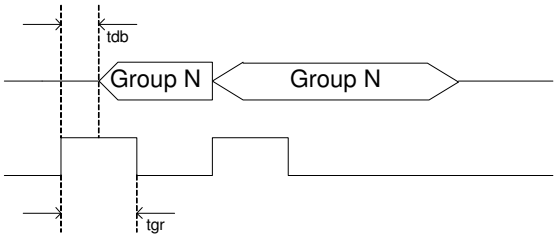


(h) Trigger Pulse Width > Group Length

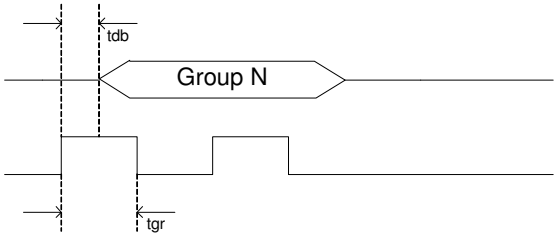
Option Setting = Level / Hold



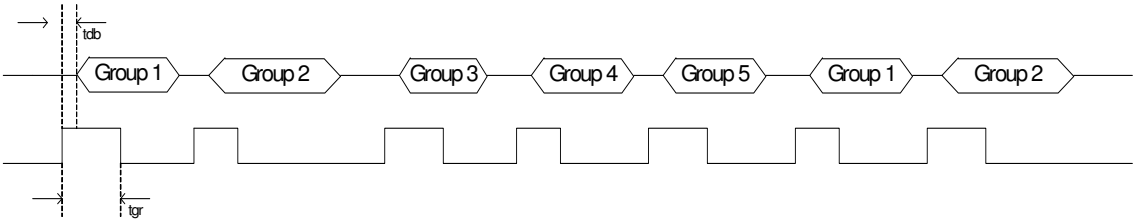
(i) Option Setting = Retrigger



(j) Option Setting = Irretrigger



(k) TG1 = Sequential Trigger & From Group1~Group5



Trigger Voice Combination Example

Voice File	Description
Voice File A	Hello (1.5”)
Voice File B	Good Morning (3”)
Voice File C	John (1”)
Voice File D	Tom (1”)
Voice File E	Mary (1.5”)

Group1 = Step1 + Step 2
Group 2 = Step3 + Step 4 + Step 5
Group 3 = Step 6 + Step 7

Group1 = Hello John
Group 2= Hello Tom Good Morning
Group 3 = Good Morning Mary

Step1 = Voice File A
Step 2 = Voice File C
Step 3 = Voice File A
Step 4 = Voice File D
Step 5 = Voice File B
Step 6 = Voice File B
Step 7 = Voice File E

Total use 3 Group , 7 Steps
Voice duration= Hello + Good Morning + John + Tom + Mary
= 1.5” + 3” + 1” + 1” + 1.5”
= 8”
Total duration = 8”(40”-8” = 32” space are free , can add more Voice File, If body=V53040)

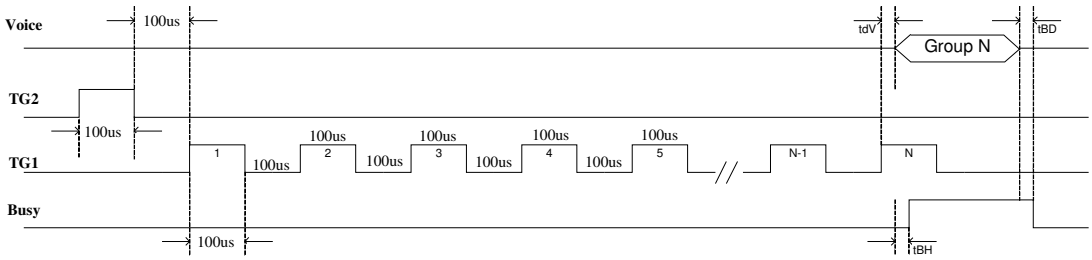
◆ Serial Mode Timing

TG1=Edge/Unhold/Retriger

TG2=Reset PIN

※Tool：Controller Trigger

◆ PWM



◆ DC Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
V_{OP}	Operating Voltage		2.0		5.0	V
I_{sb}	Standby current	LDO On				Ua
		LDO OFF				uA
I_{OP}	Operating Current	VDD=3V / No Load				uA
I_{OD}	Output drive Current					mA
I_{OS}	Output sink Current					mA
I_{ODPWM}	PWM output drive Current					mA
I_{OSPWM}	PWM output sink Current					mA

Revision History

Version	Date	Page	Item	Detail
0.01				Initial Version
0.02				Update product information
0.03				Update application circuit